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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,539	02/17/2004	Rajiv Laroia	060569	7486

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EXAMINER	
SHAND, ROBERTA A	
ART UNIT	PAPER NUMBER
2416	

NOTIFICATION DATE	DELIVERY MODE
04/02/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/780,539	LAROIA ET AL.	
	Examiner	Art Unit	
	Roberta A. Shand	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-17 and 26-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12* is/are allowed.

6)☒ Claim(s) *1,2,5-11, 13-17 and 26-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 5, 6, 8-11, 13-17 and 26-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black (U.S. 2004/0100927 A1) in view of Chang (U.S. 6895010 B1)

3. Regarding claims 1, 26 and 42, Hwang teaches (fig. 5) a communications method comprising: operating a first communications device to: perform a decoding operation on a first signal including encoded signal information (paragraph 71); determine if the encoded signal information included in the first signal was successfully decoded (fig. 5, ACK represents a successful decoding); when it is determined that said encoded information was successfully decoded, generating an ACK signal having an ACK signal phase (ACK, every ACK signal has a value which is the phase); and when it is determined that said encoded information was not successfully decoded, generating a first NAK signal having a first NAK signal phase (NAK, every NAK signal has a value which is the phase).

4. Hwang does not explicitly teach the first NAK signal corresponding to one of a plurality of possible NAK signal values, each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values, the NAK signal phase between any two of the plurality of possible NAK values having a

first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase

5. Chang teaches (fig. 4) the first NAK signal corresponding to one of a plurality of possible NAK signal values (col. 17, line 61 – col. 18, line 6, Chang teaches each NAK has a value corresponding to the sequence number of the frame received in error), each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values (Each sequence number representing the frame received in error is assigned to the NAK value is unique and unlike the other sequence numbers as each frame is different), the NAK signal phase between any two of the plurality of possible NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase (col. 19, lines 14-67, Chang teaches a NAK time counter and each NAK value is reflected from that time. Therefore any phase (time difference) between any two NAKs will differ from a phase (time difference) between any other NAKs). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hwang to include Chang's NAK values to ensure that the proper data is retransmitted.

6. Regarding claims 2 and 27, Hwang teaches (paragraph 80) decoding operation produces decoded information, the step of generating a first NAK signal including: selecting the first NAK signal value as a function of the quality of the decoded information.

7. Regarding claim 5. Hwang teaches operating the first device to perform a decoding operation includes: determining the quality of decoded information generated by decoding said encoded information; wherein operating the first device to generate a first NAK signal includes operating the first device to select the first NAK signal value as a function of the determined quality of the decoded information (paragraph 80); and wherein operating the first device further includes operating the first device to transmit the generated first NAK signal (paragraph 52).

8. Regarding claim 6, Hwang teaches (paragraphs 52 and 80) determining the quality of the decoded information includes: maintaining decoding statistics indicating the reliability of the decoded information, said decoding statistics indicating the quality of the decoded information.

9. Regarding claim 8. Chang teaches (col. 19, lines 14-51) operating the first device to transmit said first NAK signal; and operating a second device to: receive said first NAK signal; determine, from said first NAK signal value, an amount of redundant information to transmit to said first device from, different amounts of redundant information being determined for at least two different NAK signal values (Chang teaches each NAK value corresponding to the sequence number of the failed frame).

10. Regarding claims 9, 28 and 29, Hwang teaches (fig. 5) operating the first device to: transmit the generated first NAK signal; receive in a second signal including redundant information corresponding to said first received encoded signal; perform an additional decoding operation using said redundant information and information obtained from said first received

signal; and determine if the additional decoding operation successfully decoded the encoded signal information included in the first signal (Hwang teaches after determining in there is an error retransmission is performed (redundant information) and the cycle continues for successful transmission occurs (ACK signal received)).

11. Regarding claims 10 and 19, Hwang teaches (paragraphs 32-34) receiving a traffic channel assignment message from a second device (it is inherent in Hwang's system that a channel assignment take place between the base station and mobile station); and identifying from information included in said traffic channel assignment message, the first signal to which said second signal corresponds.

12. Regarding claims 11 and 15. Hwang teaches (fig. 2) the first device is a mobile node (MS) and said second device is a base station (BS); and wherein the information included in said traffic channel assignment message (it is inherent in Hwang's system that a channel assignment take place between the base station and mobile station) used to identify the first signal is an index of a traffic segment used to transmit the first signal (Hwang teaches the retransmitted frame (second) is of the first frame received in error).

13. Regarding claim 13. Hwang teaches (fig. 5) first device is a base station and said second device is a mobile node (fig. 2), comprising: operating the second device to identify from information included in the uplink channel assignment message (it is inherent in Hwang's system that a channel assignment take place between the base station and mobile station) the first signal

for which redundant information is to be transmitted in an uplink channel segment assigned by said channel assignment message Hwang teaches transmitting a NAK signal); and operating the second device to transmit said second signal including redundant information (Hwang teaches performing retransmission based on the NAK signal, paragraphs 52 and 80).

14. Regarding claim 14. Hwang teaches (paragraph 88) the information included in said uplink channel assignment message (it is inherent in Hwang's system that a channel assignment take place between the base station and mobile station) used to identify the first signal is an index of an uplink traffic segment used to transmit the first signal.

15. Regarding claim 16, 24 and 34, Hwang teaches (fig. 6) operating said first device to decode said new encoded information (Hwang teaches after determining if there is an error retransmission is performed (redundant information) and the cycle continues for successful transmission occurs (ACK signal received)).

16. Regarding claim 17. Hwang teaches (fig. 6) operating the first device to determine if the encoded signal information included in the first signal was successfully decoded by said additional decoding operation; and when it is determined that said encoded information was not properly decoded by said additional decoding operation, operating the first device to generate a second NAK (paragraph 71); NAK signal having one of said plurality of possible NAK signal values, each of said plurality of possible NAK signal values corresponding to a different level of decoding success (paragraph 80), operating the first device to generate a second NAK signal

including selecting a second NAK signal value as a function of the quality of decoded information generated by said additional decoding operation (Hwang teaches after determining in there is an error retransmission is performed (redundant information) and the cycle continues for successful transmission occurs (ACK signal received)).

17. Regarding claim 18, Hwang teaches operating a second communications device to: perform an encoding operation on information to be transmitted to produce a first set of encoded information and a set of redundant information (paragraph 80); and transmit said first set of encoded information in said first signal (fig. 5).

18. Regarding claim 20, Hwang teaches operating said second communications device further includes: operating said second communications device to: receive a NAK signal from said first device (fig.5); and determine from the value of the received NAK signal what portion of the set of redundant information to transmit to said first device (paragraphs 80-83).

19. Regarding claims 21, 32 and 38, while Hwang teaches operating said second communication device to determine what portion of the set of redundant information to transmit to said first device (fig. 5)

20. Hwang does not explicitly teach selecting the size of the portion of the set of redundant information as a function of the value of the received NAK signal, a larger size portion being selected when the value of the NAK signal indicates a first level of decoding success than when

the value of the NAK signal indicates a second level of decoding success that indicates more decoding success than said first level.

21. Chang teaches (col. 19, lines 14-67) the value of the NAK is reflected by the incomplete frame reception and the identifier is different for every NAK value based on the frame reception. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hwang to include Chang's NAK values to ensure that the proper data is retransmitted.

22. Regarding claim 22. Hwang teaches (fig. 5) operating the second communications device to transmit the determined portion of the set of redundant information to said first device in a second information signal.

23. Regarding claims 23 and 33, Hwang teaches (paragraph 80) operating said second communications device to transmit an assignment message used to assign a channel segment (it is inherent in Hwang's system that a channel assignment take place between the base station and mobile station) used to transmit said second information signal, said assignment message including information indicating the previously transmitted first signal to which the redundant information included in the second information signal corresponds, said assignment message being transmitted prior to said second information signal. Hwang teaches sending ACK or NAK based on the initial transmission and the NAK or ACK representing error or success and response to the ACK or NAK accordingly.

24. Regarding claims 25 and 35, Hwang teaches (paragraphs 67-69) the encoding operation is a low density parity check coding operation. 3

25. Regarding claims 30 and 43, Hwang teaches (fig. 5) a method of operating a communications device comprising: encoding, using an encoder (paragraph 67), information to be transmitted to produce a first set of encoded information and a set of redundant information (paragraph 71); transmitting said first set of encoded information in a first signal (paragraph 71); receiving a NAK signal from a device to which said first signal was transmitted (paragraph 80);

26. Hwang does not explicitly teach the first NAK signal corresponding to one of a plurality of possible NAK signal values, each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values, the NAK signal phase between any two of the plurality of possible NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase

27. Chang teaches (fig. 4) the first NAK signal corresponding to one of a plurality of possible NAK signal values (col. 17, line 61 – col. 18, line 6, Chang teaches each NAK has a value corresponding to the sequence number of the frame received in error), each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values (Each sequence number representing the frame received in error is assigned to the NAK value is unique and unlike the other sequence numbers as each frame is different), the NAK signal phase between any two of the plurality of possible

NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase (col. 19, lines 14-67, Chang teaches a NAK time counter and each NAK value is reflected from that time. Therefore any phase (time difference) between any two NAKs will differ from a phase (time difference) between any other NAKs). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hwang to include Chang's NAK values to ensure that the proper data is retransmitted.

28. Regarding claims 36 and 44, Hwang teaches a communications device comprising: an encoder for encoding information to be transmitted to produce a first set of encoded information (paragraph 67); a processing module configured to process received signals to recover there from communicated acknowledgement information (fig. 5) and a retransmission module to set of redundant information (fig. 5, retransmission); a transmitter for transmitting said first set of encoded information in a first signal (paragraph 71); a receiver for receiving a NAK signal from a device to which said first signal was transmitted (fig. 5, NAK);

29. Hwang does not explicitly teach the first NAK signal corresponding to one of a plurality of possible NAK signal values, each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values, the NAK signal phase between any two of the plurality of possible NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal

phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase

30. Chang teaches (fig. 4) the first NAK signal corresponding to one of a plurality of possible NAK signal values (col. 17, line 61 – col. 18, line 6, Chang teaches each NAK has a value corresponding to the sequence number of the frame received in error), each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values (Each sequence number representing the frame received in error is assigned to the NAK value is unique and unlike the other sequence numbers as each frame is different), the NAK signal phase between any two of the plurality of possible NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase (col. 19, lines 14-67, Chang teaches a NAK time counter and each NAK value is reflected from that time. Therefore any phase (time difference) between any two NAKs will differ from a phase (time difference) between any other NAKs). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hwang to include Chang's NAK values to ensure that the proper data is retransmitted.

31. Regarding claim 39 Hwang teaches a communications device comprising: a decoder module (paragraph 80) configured to decode a first signal including encoded signal information; a determination module configured to determine if the encoded signal information included in the first signal was successfully decoded (fig. 5, ACK represents a successful decoding); a signal

generation module configured to generate acknowledgement signals, said acknowledgement signals including an ACK signal having an ACK signal value (ACK, every ACK signal has a value which is the phase), when it is determined that said encoded information was successfully decoded and a first NAK signal having one of a plurality of possible NAK signal values when it is determined that said encoded information was not successfully decoded (NAK, every NAK signal has a value which is the phase).

32. Hwang does not explicitly teach the first NAK signal corresponding to one of a plurality of possible NAK signal values, each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values, the NAK signal phase between any two of the plurality of possible NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of possible NAK signal values and the ACK signal phase

33. Chang teaches (fig. 4) the first NAK signal corresponding to one of a plurality of possible NAK signal values (col. 17, line 61 – col. 18, line 6, Chang teaches each NAK has a value corresponding to the sequence number of the frame received in error), each NAK signal value, in the plurality of NAK signal values, having a NAK signal phase differing from any other one of the plurality of possible NAK signal values (Each sequence number representing the frame received in error is assigned to the NAK value is unique and unlike the other sequence numbers as each frame is different), the NAK signal phase between any two of the plurality of possible NAK values having a first quantitative difference less than a second quantitative difference between the NAK signal phase of less than the smallest amount any one of said plurality of

possible NAK signal values and the ACK signal phase (col. 19, lines 14-67, Chang teaches a NAK time counter and each NAK value is reflected from that time. Therefore any phase (time difference) between any two NAKs will differ from a phase (time difference) between any other NAKs). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hwang to include Chang's NAK values to ensure that the proper data is retransmitted.

34. Regarding claim 40 Hwang teaches (paragraph 81) a quality determination module configured to generate and maintain decoding information indicating the quality of a decoded signal.

35. Regarding claim 41, Chang teaches (fig. 4) a storage device (NAK list) including NAK level information, said NAK level information including discrete level information, said discrete level information including a plurality of NAK signal values, each possible NAK a different phase (col. 19, lines 14-67, Chang teaches a NAK time counter and each NAK value is reflected from that time. Therefore any phase (time difference) between any two NAKs will differ from a phase (time difference).

36. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black (U.S. 2004/0100927 A1) in view of Chang (U.S. 6895010 B1) and further in view of Cannon (U.S. 5881069).

37. Regarding claim 7. Hwang and Chang teach all of the limitations of claim 5.

38. Hwang and Chang do not teach a count of the number of detected errors in the decoded information.

39. Cannon teaches (fig. 3) a count of the number of detected errors in the decoded information. It would have been obvious to one of ordinary skill in the art to modify Hwang and Chang to include Cannon's error count to ensure quality of retransmission.

Allowable Subject Matter

40. Claim 12 is allowed.

41. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

42. Applicant's arguments with respect to claims 2, 5-11, 13-17 and 26-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERTA A. SHAND whose telephone number is (571)272-3161. The examiner can normally be reached on M-F 9:00am-5:30pm.

44. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

45. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Roberta A. Shand
/R. A. S./
Examiner, Art Unit 2416

/William Trost/
Supervisory Patent Examiner, Art Unit 2416